

REMARKS

At the very outset, the applicants express appreciation to the Examiner for issuing a modification of the Office Action dated July 28, 1994. Applicants regret the inconvenience caused by the crossing in the mail of their Supplemental Amendment and the 7/28/94 Office Action. The response herein will be directed to the modified Office Action dated August 26, 1994.

After the entry of the present amendment, in which claims 83, 84, 85, 88, 89, 109, 111, 112, 113, 114, 115, 140, and 141 are canceled without prejudice and claims 151 to 180 added, the pending claims now are claims 91, 92, 94-96, 98-108, 117-139, and 142-180. The amendment (1) reduces the number of independent claims by one (claim 83 was cancelled, claim 106 was changed to a dependent claim, and claim 154 added as an independent claim) and (2) adds a net of 10 dependent claims (including multiple dependencies), requiring a fee of \$220, enclosed herewith. To aid the Examiner in examining the pending claims of this application, the applicants have included an Appendix Z attached herewith (plus a loose copy) in which the text of all the claims, as they exist after the present amendment, are set forth in numerical order. In addition, and again for the convenience of the Examiner, the following table is presented showing the properties of the fuels required in the independent claims, an extra, loose copy of this table also being submitted herewith (in larger print, lengthwise, on legal-size paper):

Large Volume Ind. Claim	Combustion Ind. Claim	RVP	T ₁₀	T ₅₀	T ₉₀	Olefin	Paraffin	Octane	Oxygenate Required
117(a)	142(a)	<7		≤210			>72	≥87	No
117(b)	142(b)	<7		≤210			>65	≥92	No
117(c)	142(c)	<7		<193		<10		≥87	No
117(d)	142(d)	<7		≤210		< 1		≥87	No
154(d)	142(h)	<7	≤158	≤215		<10		≥87	Yes up to 14.9% MTBE
117(e)	91	<7		≤210	<300	<10		≥87	No
	96	<7	≤158	≤210	<300	<10		≥87	No
154(a)	142(e)	<7.5	≤158	≤215	≤315	<10	>65	≥87	Yes
154(b)	142(f)	<7	≤158	≤215			>65	≥87	Yes
154(c)	142(g)	<7	≤158				>70	≥87	Yes

The present amendment, although changing and adding numerous claims, preserves applicants' aim of seeking protection for essentially two major embodiments of their invention:

(1) the first, denominated herein the "combustion" embodiment, is a method of reducing pollutant emissions, or aiding in minimizing pollutant emissions, during the operation of an automobile engine by combusting a specific gasoline (claims 91 & 96 and their dependencies), or any of a select group of gasolines (claim 142 and its dependencies), in the automobile engine, and

(2) the second, herein denominated the "large volume consumption" embodiment, is a method to aid in minimizing pollution due to auto emissions by producing any of a select group of gasolines, and subsequently delivering them to a substantial number of gasoline service stations and thence into a substantial number of automobiles for combustion in a

geographical region having significant air pollution due to auto exhaust (claims 117 and 154 and their dependencies). In addition, claim 117 has been amended, and new claim 154 drafted, so that in the third step the gasoline is dispensed from the service stations into the automobiles for "subsequent combustion therein." Since this is the primary function of gasoline service stations, the teachings on pages 31 to 36 support this added terminology, as does the language in original claims 76 and 78.

Former "large volume consumption" claim 106 has been re-drafted by amendment to be a dependent "combustion" claim. The fuel recited in former claim 106 is now in "large volume consumption" claim 117, as fuel (e). New independent claim 154 is also a "large volume consumption" claim, differing from claim 117 by, among other things, a Markush group of oxygenated fuels. Support for the fuels recited in new independent claim 154 can be found in the locations (among others) shown in the following table:

Claim 154

Support

Fuel (a)

Page 3, line 30
Page 8, lines 29 - 33
Page 9, lines 2-5, 8 & 26
Page 28, lines 16-17 & 34
Page 29, lines 28-29
Page 36, lines 1-6
Original claim 26

Fuel (b)

Page 3, line 31
Page 8, lines 29 - 33
Page 9, lines 2-5, 8 & 26
Page 28, lines 16-17
Page 36, lines 1-6

Fuel (c)

Page 3, line 31
Page 8, lines 29 - 33
Page 9, lines 2-5, 8 & 26
Page 29, line 30
Page 36, lines 1-6

Every limitation introduced into any of the new claims or into an existing claim has full support in the specification and/or original claims. The following table shows where (among other places) support can be found for the following gasoline property limitations introduced into a claim by this amendment:

<u>Limitation</u>	<u>Support</u>
Unleaded	Page 3, lines 2-5
RVP no greater than 6.8 psi	Page 29, lines 10 - 12
RVP less than 7 psi	Page 3, line 31
RVP less than 7.5 psi	Page 3, line 30
T ₁₀ no greater than 135°F.	Page 29, line 17
T ₁₀ no greater than 140°F.	Page 29, line 16
T ₁₀ no greater than 158°F.	Page 9, line 26
T ₅₀ less than 193°F.	Page 28, lines 21-22
T ₅₀ less than 200°F.	Page 28, lines 19-20
T50 no greater than 210° F	Page 28, line 17
T ₅₀ no greater than 215°F.	Page 28, lines 16-17
Octane value of 87+ or 92+	Page 9, line 8
T90 no greater than 315° F.	Original Claim 18 & 26
T90 less than (or no greater than) 300°F.	Original Claim 29 Page 14, lines 1 - 3
Paraffin content greater than 72%	Page 29, lines 30 & 31
Paraffin content greater than 70%	Page 29, line 30
Paraffin content greater than 65%	Page 29, lines 28 & 29
Olefin content less than 10%	Page 28, line 34
Olefin content less than 8%	Page 28, line 34
Olefin content less than 6%	Page 28, line 35
Olefin content less than 1%	Page 28, line 35
Presence of Oxygenate	Page 8, lines 29 to 33 Page 36, lines 1 to 10 Tables 2 & 5
No greater than 14.9% Oxygenate	Page 8, lines 29 to 33 Page 36, lines 1 to 10 Table 2
10.1 to 14.9% Oxygenate	Page 8, lines 29 to 33 Page 36, lines 1 to 10 Tables 2 and 5

With the exception of the limitations for $T_{90} < 300^{\circ} \text{ F.}$ and $RVP \leq 6.8 \text{ psi}$, all limitations in the foregoing table will be found to have 100% literal support in the specification and/or original claims. However, as the Examiner is no doubt aware, there is no requirement under 35 USC 112 and the decisional law pertaining thereto which requires literal support for a limitation. The above noted $T_{90} < 300^{\circ} \text{ F.}$ and $RVP \leq 6.8 \text{ psi}$ limitations, which were both in claims pending prior to this amendment, are supported within the meaning of 35 USC 112 in the locations shown in the above table, among others.

Many of the present claims have a requirement for "paraffins" in a concentration greater than a specified value. As applicants pointed out in their IDS No. 3, Section 'G, the paraffin values in Tables 2 and 5 of their specification are reported differently. In both Tables 2 and 5, the olefins, aromatics, & paraffins were determined by the well known FIA method; MTBE was determined by IR analysis. In the FIA method, the three gasoline components olefins, aromatics, and paraffins add up to 100%. In Table 2 the MTBE value was subtracted from the paraffin content (as can be seen by the fact that the olefins + paraffins + aromatics add up to less than 100% when MTBE is present). For purposes of claim construction, and in keeping with how applicants have been construing "paraffins" in the claims throughout prosecution of this application and its parent, the "paraffin content" is determined without reference to the oxygenates (as in Table 5), i.e., the paraffins are determined by the FIA test uncorrected in any way for oxygenates (this being the FIA test in existence prior to applicants' effective filing date of Dec. 13, 1990). Moreover, as was

explicitly pointed out in the prosecution of the parent application, the "paraffins" of applicants' claims include not only straight and branched chain paraffins but also the naphthenes (cycloparaffins), this construction again being consistent with how "paraffins" are determined by the FIA test.

With regard to the terms "month" and "six months" in some of the claims, the construction is for any calendar month or any calendar six month period, respectively.

It should also be noted that applicants have presented four dependent claims 170, 172, 174, and 175 directed to numerical amounts or percentage proportions of gasoline produced in step (1) or dispensed in step (3) in the "large volume consumption" embodiment of the claimed invention. Claims 170, 172, and 174 were modeled on already pending claims 118, 119, and 120, respectively. Claim 175 is a new claim, directed to the large volume production of the specified gasolines (at least 25% of the refinery production) over a 6 month time period, with the gasoline thus produced then being distributed to service stations and from thence into automobiles. Claim 175 finds support in original claim 77 as well as the specification from pages 31 to 36, and in particular page 34, lines 13 and 32-33.

Housekeeping Matters

Before addressing the merits of the 35 USC 112 and 103 rejections of the last Office Action, there are two "housekeeping" matters which need addressing, as follows:

A. The Examiner has made of record an EXAMINER INTERVIEW SUMMARY RECORD, in which none of the boxes in the lower part of the form was checked, thus necessitating applicants to provide a separate record of the interview. However, there truly is little for applicants to say. As the Examiner noted, the merits of the case were not discussed. Recognizing that the material delivered to the Examiner on April 28, 1994 was extensive, applicants' attorney believed it only courteous to briefly explain how the materials were organized. In particular, applicants' attorney explained orally how the references in the four three ring binders were submitted with blue or white tabs, the white tabs identifying references applicants' attorney believed most pertinent, as discussed in written detail in Section A of IDS #3. Applicants' attorney further explained that two of the three ring binders contained CRC papers arranged in numerical order, the third binder contained SAE papers in numerical order, and the fourth contained miscellaneous documents and U.S. patents, the latter in numerical order. In addition, applicants' attorney briefly explained what was in each of Sections A through G of IDS #3, as well as the fact that a synopsis of each of said sections could be found in the "OVERVIEW" Section of IDS #3. Again, the merits of the case were in no way discussed; no arguments seeking to establish the patentability of any claim was advanced by applicants' attorney;

and nothing was disclosed to the Examiner which was not already contained in the written materials delivered on April 28, 1994.

B. For many of the references previously submitted for the Examiner's review, the applicants have not received back written confirmation (i.e., an initialed PTO 1449 Form) of the Examiner's consideration of them. Many PTO 1449 Forms were sent to the Examiner, and some have been returned, and some not. To avoid any confusion, and to be as helpful as possible to the Examiner, the applicants are herewith submitting new PTO 1449 Forms listing not only the references submitted with this communication via IDS No. 4 but also those references for which the applicants have received no confirmation of the Examiner's consideration. Thus, if the Examiner will merely indicate on the enclosed PTO 1449 Forms her consideration of these references, the present application file will then accurately reflect her review of all publications submitted to the USPTO by applicants in this application.

In the event the Examiner desires to know which PTO 1449 Forms applicants have not received back and for which the same references will be found listed on the new PTO 1449 Forms enclosed herewith, applicants state that they have received back none of the PTO 1449 Forms relating to the references submitted with Sections A and C of IDS No. 3, as well as none of the fifteen PTO 1449 Forms hand-delivered to the USPTO (with copies of the art) on May 9, 1994 as to the references of record in the file of applicants' parent application, now issued U.S. Patent 5,288,393. Additionally, although the Examiner returned the PTO 1449 Forms relating to Section B of IDS No. 3 with most of the

references indicated as having been considered, there were still nine references which were not identified by the Examiner as having been considered. Applicants' attorney speculates that perhaps the Examiner did not place her initials in the pertinent locations on the PTO 1449 Form because of some difficulty in finding copies of the references in the four three-ring binders supplied with IDS No. 3. If so, the following table is presented showing the Examiner where she can quickly find each of the nine references in the binders, as well as three additional references submitted with IDS No. 3, Section B but which were inadvertently omitted from the original PTO 1449 forms submitted to the USPTO.¹ All totaled, therefore, the following table identifies and locates twelve references from IDS No. 3, Sec. B, for which applicants have no confirmation of consideration by the Examiner:

¹ The three references are

(1) "Reformulated Gasoline for Clean Air, An ARCO Assessment" by K. L. Boekhaus et al., for "Roads to Alternative Transportation Fuels" 2nd Biennial U.C. Davis Conference on Alternative Fuels, July 12, 1990;

(2) "The Impact on Fuels of the 1990 Clean Air Act Amendments," by C. A. Lieder, presented at the NPRA National Fuels and Lubricants Meeting, Nov. 1-2, 1990, Houston, Texas; and

(3) "Motor Fuels, Performance and Testing," William A. Gruse, Reinhold Publishing Corporation, 1967, page 104. Copies of these three references were included in the three-ring binders submitted with IDS No. 3, and they were also identified on page 7 of IDS No. 3, Section B, as references 68, 69, & 70, these references then being briefly summarized on pages 11 and 12 of IDS No. 3, Section B. The Examiner will find that these three references are listed among those on the enclosed PTO 1449 Forms.

REFERENCE	TITLE OF BINDER VOLUME	DOCUMENT NUMBER
CRC Project NO. CM-125-78, "Performance Evaluation of Alcohol-Gasoline Blends in 1980 Model Automobiles," July 1982, page C-13.	Coordinating Research Council References VOL. II (last reference in book)	35
SAE Paper No. 710136, "The Effect of Gasoline Volatility on Emissions and Driveability," by P. J. Clarke, 1971.	SAE References	1
SAE Paper No. 710364, "Effects of Fuel Factors on Emissions," by S. S. Sorem, 1971.	SAE References	3
SAE Paper No. 730616, "Gasolines for Low-Emission Vehicles, by J. C. Ellis, 1973.	SAE References	11
SAE Paper No. 740694, "Fuels and Emissions -- Update and Outlook, 1974." by R. W. Hurn et al., 1974.	SAE References	13
SAE Paper No. 750419, "Methanol-Gasoline Blends Performance in Laboratory Tests and in Vehicles," by A. W. Crowley et al., 1975.	SAE References	15
SAE Paper No. 780653, "The Hot-Fuel Handling Performance of European and Japanese Cars," by B. D. Caddock et al., 1978.	SAE References	23
SAE Paper No. 852132, "Gasoline Vapor Pressure Reduction--an Option for Cleaner Air," by R. F. Stebar et al., 1985.	SAE References	31
BERC/RI-76/15, "Experimental Results Using Methanol and Methanol/Gasoline Blends as Automotive Engine Fuel,"	Patents & Misc. References	13

by J. R. Allsup, Published
by Bartlesville Energy
Research Center, Energy
Research and Development
Administration, Bartlesville,
Oklahoma January 1977, pages 1-7.

"Reformulated Gasoline for Clean Air, An ARCO Assessment" by K. L. Boekhaus et al., for "Roads to Alternative Transportation Fuels" 2nd Biennial U.C. Davis Conference on Alternative Fuels, July 12, 1990.	Patents & Misc. References	20
"The Impact on Fuels of the 1990 Clean Air Act Amendments," by C. A. Lieder, presented at the NPRA National Fuels and Lubricants Meeting, Nov. 1-2, 1990, Houston, Texas.	Patents & Misc. References	21
"Motor Fuels, Performance and Testing," William A Gruse, Reinhold Publishing Corporation, 1967, page 104.	Patents & Misc. References	22

Again, the applicants request that the Examiner indicate her consideration of the submitted references in this patent application by simply initialing the enclosed PTO 1449 Forms in the appropriate locations. As pointed out above, by so doing, the record will then accurately reflect the Examiner's consideration of all references submitted to the USPTO in this patent application.

The 35 USC 112, Second Paragraph Rejection

In the Office Action, the Examiner rejected claims 83-85, 88, 89, 91, 92, 94-96, 98-109, and 111 to 150 under 35 USC 112, second paragraph, for indefiniteness. These rejections are not meritorious and must be traversed.

The test for whether a claim is definite is well known. The 2nd paragraph of 112 requires applicants to present claims which set forth the metes and bounds of their invention with sufficient particularity--to the degree the subject matter permits--so that one of ordinary skill in the art can reasonably determine whether what he or she intends to do falls within or without the claim. The applicants believe the Examiner's arguments have clouded the relevant issue, especially by directing attention to a number of items which, in any given situation, could affect the degree of emissions reduction--e.g., carburetor types, fuel-air ratios, etc. As will be explained below, the applicants have no quarrel with the fact that many factors come into play with respect to emissions reduction, but any inquiry thereinto is entirely irrelevant to the issue of whether one of ordinary skill in the art would have any doubt about whether what he or she decides to do in the future would infringe the claims in question.

In particular, a person skilled in the art may do a host of things in the future to reduce emissions from an automobile--renovate carburetors, change fuel/air mixtures, upgrade catalytic converters, modify engines, etc.--but the claims only protect the combination of steps specifically identified in the claims. For example, in claim 91 the protection extends to a method comprising:

1. introducing into the engine of an automobile with a catalytic converter an unleaded gasoline of specified properties:

RVP < 7.0 psi	T50 ≤ 210° F	T90 < 300° F
Olefins < 10	Octane Value ≥ 87	

2. combusting the gasoline in the engine;
3. contacting the resultant exhaust emissions with the catalytic converter; and
4. discharging the exhaust emissions from the catalytic converter to the atmosphere.

It is inconceivable that one skilled in the art of automobile combustion could have any problem determining whether he or she would be performing acts falling inside or outside the scope of such a claim. The steps of the claim are so definite that a person could not be skilled in this art and at the same time legitimately assert an inability to determine the scope of claim 91. The same is true for the other claims; hence, the claims meet the statutory test for definiteness.

Accordingly, the applicants submit that the 35 USC 112, second paragraph rejections are without foundation and should be withdrawn--without more needing to be argued by the applicants. However, for the sake of a complete response, the applicants will address each of the Examiner's arguments as to the 35 USC 112 rejections, as follows:

A. Catalytic Converter

Recognizing that all the claims require the introduction of gasoline into automobiles equipped with catalytic converters, the Examiner argues that it is inherent for catalytic converters to reduce pollutants. The applicants agree, but cannot see how this is at all relevant to whether a person skilled in the art knows whether he or she is performing the three (or four) steps of the claims.

Granted, catalytic converters are highly useful in reducing pollutants in exhaust emissions; likewise, catalytic converters are not perfect. Pollutant emissions still occur, and the present invention is one method--and as it turns out, an important one--for further reducing pollutants from automobiles equipped with catalytic converters.

A bit of background to place the invention in context may be in order.

As the Examiner is no doubt aware, the 1990s ushered in a quest by both the Federal government and a number of state governments for "reformulated gasolines." The EPA, for example, has regulations that will become effective in 1995, with yet more stringent regulations coming into effect in 1998, and still further stringent regulations in the year 2000. California, having been through a "Phase 1" process, is soon to initiate a Phase 2, in which gasolines of reduced RVP, T50, etc. (which, for the most part, if not exclusively, fall within the scope of the compositions required by the claims of the present invention) will be mandated.

Clearly, the fact that state and Federal agencies are mandating reformulated gasolines for the 1990s--despite the fact that the vast majority of automobiles on the road are equipped with catalytic converters--is evidence (if evidence be needed) that catalytic converters are not perfect. They still release pollutants, and the aim of the governmental regulators is to lower such pollutants still more via reformulated gasolines.

Thus, the present invention, being directed to the use of applicants' version of reformulated gasolines in automobiles with catalytic converters, can hardly be considered indefinite by those skilled in the art.

B. Carburetor types, air/fuel ratios, etc.

The Examiner argues that a number of factors--carburetor type, air/fuel ratios, spark retardation, etc.--affect pollutant emissions. Again, the applicants fully agree, but fail to see value in the Examiner's point. Is the art supposed to stop searching for additional ways to reduce pollutants simply because, no matter what single method is invented to reduce pollutants, a number of factors in a given situation will also contribute to the actual pollution emissions?

The answer clearly is no. Applicants submit that the proper way to view their invention is this: all other things being equal, the use of the specified fuel in automobiles with catalytic converters in accordance with the claims will generally result in reduced emissions--particularly when the fuel is combusted in a great number of automobiles where the individual effects of other factors tend to "even out" or disappear.

Again, this is perfectly in line with what the EPA and numerous state agencies themselves tacitly recognize. These regulators must realize that, from automobile to automobile, from engine to engine, varying degrees of pollutant emissions will result when the same fuel is used. But in the bigger picture it would be equally well recognized that mandating specific

gasolines, determined to yield low emissions upon combustion, will have an overall beneficial impact when they are combusted in thousands, if not millions, of automobiles. (Hence, the importance of applicants' "large volume consumption" claims, e.g., claims 117, 154, and their dependencies.)

Thus, applicants fail to see any merit with respect to a 112 definiteness issue in the Examiner's comments regarding carburetor types, air-fuel mixtures, etc. Indeed, if anything, the Examiner's comments merely accentuate the applicants' arguments as to the importance of the "large volume consumption" claims.

C. "Reducing" pollutants

The Examiner also argues that:

The method claims ("i.e., "combustion" claims 83-85, 88, 89, 91, 92, 94-96, and 98 - 105). . . are deemed indefinite since upon combustion pollutants are produced and the terminology of reduction is deemed in opposition to the process occurring. . . (Office Action, page 2)

The Examiner is quite correct that, in the typical embodiment of the invention, pollutants are produced. And from that narrow and limited focus, the invention as claimed may seem "in opposition" to a preamble characterizing the invention as **reducing** pollutants. On the other hand, the Examiner herself stated that catalytic converters inherently reduce pollutants, but they also yield pollutants. So, from the same narrow and limited focus, a catalytic converter is "in opposition" to its intended purpose.

Clearly, "reducing" is an appropriate term for what this invention achieves in comparison to what is possible with other fuels. That is, if with a conventional fuel, one yields 10 gm/mile of pollutants and with the invention one yields 1 gm/mile, then by any appropriate measure there is a reduction in pollutants, even though both fuels yield pollutants. And it is from that focus--which applicants submit is the only logical one (given the nature of this invention, as well as applicants' disclosure on page 6, lines 6 to 25, which specifically addressed the substance of the Examiner's point long before it appeared in the last Office Action)--that the term "reducing" should be construed.

In light of the foregoing, therefore, the applicants are convinced there is nothing indefinite in their use of "reducing." Nevertheless, because the Examiner raised a point echoing a similar thought expressed in In re Dillon, 16 USPQ2d 1897, 1903 (Fed. Cir. 1990), en banc, the applicants have drafted and/or changed the "reducing" term in four of the five independent claims to "aids in minimizing" (or "aiding in minimizing") the amount of tailpipe emissions (i.e., claims 91, 117, 142, and 154). It is submitted that this new language is both an accurate characterization of the invention (as well as being fully supported by the disclosure, particularly at page 1, lines 3-7; page 1, line 29 to page 2, line 7; and page 8, lines 20-24) and entirely overcomes the Examiner's argument by rendering the issue relative to "reducing" as to these claims moot.

However, with respect to the fifth independent claim, i.e., claim 96, this claim has not been amended to delete the "reducing" language, and this because it contains language for actually measuring a "reduction" against another fuel, i.e., A/O AVE of Table 2.

D. No Point of Reference

Additionally, the new language "aids in minimizing" effectively overcomes the Examiner's argument that "combustion" claims 83-85, 88, 89, 91-95 and 98-105 fail to have a point of reference of the reduction.

(Because some of these claims have been canceled and other claims have been added, this argument of the Examiner will be addressed as if it had been applied against presently pending independent "combustion" claims 91 and 142 and all their dependencies.) As understood, the Examiner is saying that the invention of these claims is indefinite because there is no requirement for a reference gasoline against which to compare the fuels of these claims (in contrast to claim 96 which has a requirement for a reference gasoline fuel). However, the new language "aiding in minimizing" the amount of emitted pollutants removes the need for any reference gasoline in the claims at issue.² Applicants have, through their disclosure, taught that gasolines as required

² Although it is applicants' position that no reference fuel is needed for the claims employing the "aid(s)ing in minimizing" language, if it should be deemed otherwise, the person skilled in the art could use a fuel of properties similar to Fuel A/O AVE, the reference fuel employed in all three Examples of the specification. (Note that Fuel Q of Table 5 was another designation for A/O AVE; see IDS No. 2, page 2. The difference in analytical results for the properties of A/O AVE of Table 2 and Fuel Q of Table 5 is believed due to production variances leading to somewhat different compositions in different drums of A/O AVE gasoline received by applicants.)

in the invention have beneficial combustion properties in comparison to typical conventional gasolines available prior to their filing date. And their Examples have given a reasonable basis for concluding that substantially consistent use of the fuels of the invention in accordance with the three (or four) steps set forth in the claims at issue will "aid in minimizing" tailpipe emissions.

Thus, the language "aiding in minimizing" is definite, with the applicants stressing as strongly as possible the fact that the "aiding in minimizing" language resides in the preamble of the claims. Terms in the preamble of applicants' claims are for characterizing the nature of the invention defined by the three (or four) steps--i.e., to place the subsequent steps in a context that a skilled person can understand. In short, the preamble is merely an introduction for the invention claimed. See DeGeorge v. Bernier, 226 USPQ 758, 761 n.3 (Fed. Cir. 1985).

And for the record, applicants will state that the claim language "aiding in minimizing" tailpipe emissions does not require the tailpipe emissions to in fact be minimized. Taking the Examiner's point that many factors affect the actual amount of pollutants emitted in a given case, some of those factors may actually increase emissions. But it is a fair characterization of the invention that it aids in minimizing pollutants, and given that the case law regarding 112 2nd paragraph rejections repeatedly have held that definiteness is required only to the

degree the subject matter permits,³ applicants are convinced that their claims with the "aiding in minimizing" language in the preamble are manifestly definite within the meaning of the statute.

E. Large Volume Consumption Claims

The Examiner also argues that the "large volume consumption claims" are indefinite because, although they refer to reducing air pollution, the claims only require delivery of gasoline from one location to another, without any further requirement for combustion. For example, the Examiner states that:

Claims 117-150 (sic, 117-141?) are rejected as being indefinite for failing to clearly define how air pollution is reduced by merely producing, delivering and dispensing an unleaded gasoline from a service station since upon combustion pollutants are formed.

The applicants are in full agreement with the Examiner's point that, without combustion, no combustion emissions can be produced, but they disagree that the claims at issue are indefinite as a result.

Applicants' claims cannot be read in a vacuum. On an absolutely 100% literal basis, the Examiner is correct that (prior to the present amendment) all that the "large volume consumption" claims required was the production of gasoline and its movement from one location to another and then to another.

³ See, for example, *Shatterproof Glass Corp. v. Libbey Owens Ford Co.*, 225 USPQ 634, 641 (Fed. Cir. 1985) and *Andrew Corp. v. Gabriel Electronics Inc.*, 6 USPQ2d 2010, 2012-13 (Fed. Cir. 1988). The claims need only "reasonably" apprise those skilled in the art of the scope of the invention with a "reasonable degree of particularity."

But one must also bear in mind what the final location was (and still is): a substantial number of automobiles in a substantial number of service stations. Theoretically, the invention as claimed could be accomplished without combustion of the gasoline, i.e., the many automobiles could all be towed into the many service stations, filled with the gasoline as required in the claims, and then be towed out again--all without ever combusting the gasoline in the automobiles.

However, it is doubtful that anyone skilled in the art would avail himself/herself of such an "invention"--the point being that the practical reality behind the claims at issue is that they would never be infringed without subsequent combustion of the gasoline in the automobiles.

Thus, although applicants believe that the original claim language, which necessarily speaks to those skilled in the art, would be seen to encompass an invention which does in fact reduce pollution when gasoline is consumed on a large scale in an area of significant air pollution, the applicants have amended (or newly drafted) the independent "large volume consumption" claims 117 and 154 not only to replace the "reducing" language with the "aid in minimizing" language discussed above, but also to require that the "dispensing" of the gasoline from the service stations into the automobiles in the final step be "for subsequent combustion therein," i.e., subsequent combustion in the automobiles. This new claim language is submitted to completely overcome the Examiner's arguments on this point.

F. Oxygenates

The Examiner also argues that

"(t)he addition of oxygenates is . . . well known to reduce pollutant emissions inherently."

Applicants will not comment on the accuracy of this statement other than to say that, if one assumes the Examiner's statement is 100% scientifically accurate, her statement is also 100% irrelevant to the issue of definiteness under 35 USC 112. With respect to the "oxygenate" limitations in some of the claims and their relationship to a 112, second paragraph rejection, the issues are (1) whether one skilled in the art would know whether an oxygenate is present in a fuel he or she desires to employ and (2) whether such a person would be able to determine the concentration of oxygenate in the fuel. Simply presenting the issues answers them; there is no 112 definiteness problem regarding the term "oxygenate."

Perhaps what the Examiner meant by her statement that oxygenates were well known to reduce emissions inherently was that, since it is allegedly well known that oxygenates reduce pollution, then claims requiring such oxygenates would not define an invention unobvious over the art. If so, the proper place to consider this point is with respect to the obviousness issue under 35 USC 103. Accordingly, applicants will defer detailed discussion of this point until later in the arguments pertaining to the 35 USC 103 rejections. But with specific regard to the rejection under 35 USC 112, second paragraph, there is **no possibility** that the requirement for the presence of oxygenates can be maintained as indefinite. Accordingly, for this reason, plus all those advanced above, the 35 USC 112, second paragraph rejections should be withdrawn.

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The Examiner also argues that

"(t)he addition of oxygenates is . . . well known to reduce pollutant emissions inherently."

Applicants will not comment on the accuracy of this statement other than to say that, if one assumes the Examiner's statement is 100% scientifically accurate, her statement is also 100% irrelevant to the issue of definiteness under 35 USC 112. With respect to the "oxygenate" limitations in some of the claims and their relationship to a 112, second paragraph rejection, the issues are (1) whether one skilled in the art would know whether an oxygenate is present in a fuel he or she desires to employ and (2) whether such a person would be able to determine the concentration of oxygenate in the fuel. Simply presenting the issues answers them; there is no 112 definiteness problem regarding the term "oxygenate."

Perhaps what the Examiner meant by her statement that oxygenates were well known to reduce emissions inherently was that, since it is allegedly well known that oxygenates reduce pollution, then claims requiring such oxygenates would not define an invention unobvious over the art. If so, the proper place to consider this point is with respect to the obviousness issue under 35 USC 103. Accordingly, applicants will defer detailed discussion of this point until later in the arguments pertaining to the 35 USC 103 rejections. But with specific regard to the rejection under 35 USC 112, second paragraph, there is no possibility that the requirement for the presence of oxygenates can be maintained as indefinite. Accordingly, for this reason, plus all those advanced above, the 35 USC 112, second paragraph rejections should be withdrawn.

The 35 USC 103 Rejections

A. Introduction

Before directly addressing the obviousness rejections of the last Office Action, a few introductory points are in order to put the invention into proper context.

The present invention is directed to a gasoline which, upon combustion, yields reduced amounts of pollutant emissions from automobiles with catalytic converters. This remarkable result is achieved with a gasoline having a combination of unusual properties. Indeed, one of the remarkable things the prosecution of this case has revealed is that--despite the many, many teachings in the prior art relating to gasolines--the gasolines for use in the invention are, at a minimum, highly unusual.

For example, consider Fuel (e) of claim 142 (identical to fuel (a) of claim 154) having the following properties:

RVP < 7.5 psi	T10 ≤ 158° F.
paraffins > 65%	T50 ≤ 215° F.
olefins < 10%	T90 ≤ 315° F.
oxygenated	octane ≥ 87
unleaded	

Unquestionably, many gasolines can be found having one or more of the foregoing nine properties.⁴ Indeed, unleaded prior art gasolines of T10 $\leq 158^\circ$ F. and octane value ≥ 87 are common, yet gasolines having all the foregoing nine properties are highly unusual, and, it is believed, not within the multitude of prior art submitted to the Examiner. To see how "highly unusual" Fuel (e) is, consider the following:

(1) On the computer data base described in the Preliminary Amendment on page 11 containing over 49,000 analyses of gasolines sampled throughout the country from 1981 through 1990, there are no gasoline samples meeting all the foregoing criteria. Indeed, there is not even one sample meeting the following five of the nine requirements: RVP < 7.5 psi, T50 $\leq 215^\circ$ F., T90 $\leq 315^\circ$ F., paraffins > 65%, and olefins < 10%. (See Enclosure 1.)

(2) On the Niper data base discussed in detail in IDS No. 3, Section D, of nearly 26,000 analyses of commercial summer gasolines from 1976 - 1990 (sans 1987), no sample met all nine requirements of fuel (e) of claim 142. In fact, only 15 samples met the combined three requirements of RVP < 7.5 psi, T50 \leq

⁴ For example, the properties for ARCO EC-1 as reported in "Reformulated Gasoline for Clean Air, An ARCO Assessment" by Boekhaus et al. on page 17 in Table I (this publication submitted by applicants with IDS No. 3, Section B (page 7) and discussed in said Section B on page 12):

RVP	7.6 psi	Oxygen	1.0 wt%
T10	128° F.	Octane	88.0
T50	209° F.	Lead	<0.001 g/gal
T90	351° F.	Olefins	10.0 vol%
		Saturates	71.0 vol%

has six properties (T10, T50, unleaded, oxygenated, octane & saturates) directly within the requirements of Fuel (e), two others (RVP & Olefins) very close to the requirements of Fuel (e), and one (T90) substantially different from the Fuel (e) requirements. (No admission is made that either EC-1 with the foregoing properties or the Boekhaus et al. publication is "prior art.")

215°F., and T90 ≤ 315° F., and five of these were **leaded** fuels. (See Enclosure 2.)

(3) Of some 34 pages of refinery data from applicants' San Francisco and Los Angeles refineries presented in IDS No. 3, Section E, Attachments E, F, G, and H, there is **no** record of a gasoline being produced meeting all nine requirements of fuel (e), with the Fuel dated July 1, 1988 on Enclosure 3⁵ being the one which seems to be the closest (but this fuel being unoxygenated as seen by the blending sheet for the July 1, 1988 fuel on page 2 of Enclosure 3.)

(4) Of the 33 pages of gasoline data from the applicants' assignee's internal memoranda presented in IDS No. 3, Section F, Attachment I, not one reported gasoline meets the nine requirements of Fuel (e).

(5) And, insofar as applicants are aware, of the multitude of publications applicants have made of record in this application, not one pre-1991 reference discloses a fuel of the nine properties claimed. To confirm this, applicants, as explained in the accompanying IDS No. 5, computer-tabulated all data pertaining to unleaded fuels found in the pre-1991 publications of record, totaling some 293 lines of data as seen in Attachment P, enclosed herewith. The computer was then programmed to sort these data and list all fuels meeting the nine properties above specified, the result, as shown in Enclosure 4, being **none**. One or two of the fuels in Attachment P come "close" to a fuel of the nine required properties, e.g., Fuel 6 of CRC 494 (to be discussed in detail hereinafter) but no fuel comes **directly** within all nine requirements.

⁵ Page 1 of Enclosure 3 is a duplicate of the last page of Attachment E of Section E of IDS No. 3.

In light of the foregoing, applicants again submit that at a minimum one would have to concede that Fuel (e) of claim 142 is a highly unusual gasoline. Indeed, Fuel (e) is a very atypical gasoline--starting with its unusually low RVP of < 7.5 psi (with all other fuels of the claims having an even more unusual, lower RVP: < 7.0 psi).

Typical commercial prior art gasolines have a maximum RVP specification in the range of 9 to about 14 psi. Such specifications make it in the best financial interest of a refiner to blend butane and other light ends into gasoline so as to raise the RVP as close as possible to the maximum. The reason for this is that butane has a relatively low value of, say, 25c/gal if sold as a low BTU gas, but, as a gasoline component, it can be sold in gasoline for the price of gasoline: 50-60c/gal, pre-tax (about twice as much).

Thus, it stands to reason that, economically, one wants to put as much butane as possible into gasoline, but as butane is added, the RVP inherently goes up. Thus, if the maximum specification for gasoline is, say, 9 psi, then the refiner is going to strive to be as close to the maximum as possible because to do otherwise is, in effect, to throw away money.

The foregoing explanation, as lengthy as it is, is offered so that the Examiner will understand that the prior art had a powerful incentive--money--to avoid low RVPs. And even if the thought would occur to lower the RVP, the natural method for so doing--eliminating butane and light ends--would raise the T50. (The T50 \leq 215 F. for Fuel (e) is an unusually low value for

prior art gasolines.) Thus, a fuel such as Fuel (e) is a most unlikely fuel for a refiner to produce (due to both a low RVP and low T50), and this is one reason for the dearth of prior art in the area. Indeed, any prior art data point indicating a low RVP for a commercial gasoline is probably inaccurate, i.e., if data for a commercial gasoline show an RVP of, say, 6.5 psi, one skilled in this art would have to seriously question this value. Given the powerful incentive to keep the RVP high, any prior art data showing an RVP of 6.5 psi for a commercial gasoline stands a strong chance of being a mistake (either a mistake in production if the RVP is truly low, but more likely a mistake in the gasoline analysis, the latter being more probable given the fact that the RVP test results in a lower than actual value if the fuel sample is "weathered," e.g., by improper storage allowing escape of its light ends).

B. The Oberdorfer Reference and its Combination with CRC 494

In the last Office Action, the Examiner twice rejected all claims for obviousness, one rejection being over Oberdorfer alone and the other over Oberdorfer in combination with Fuel 6 of CRC 494. These rejections must be traversed. The present invention may be many things, but one thing it is not, is obvious.

The rejection over Oberdorfer alone is especially questionable. The applicants agree with the Examiner that combusting gasoline and passing the emissions through a catalytic converter is well known to produce "reduced emissions."

Likewise, some prior art gasolines are known to contain oxygenates.

But neither of the foregoing facts in any way leads to the conclusion that the present invention is "obvious," and certainly not when the invention as a whole is considered, as it must, under 35 USC 103.

A determination of "obviousness" can never be made in a vacuum. It is vital to always bear in mind what the applicants have invented and claimed, and compare that against the prior art.

Here, the inventors, based on extensive testing and computer analysis (as set forth in the Examples of the specification), uncovered relationships between a number of gasoline fuel properties and their individual impact on specific pollutants in tailpipe emissions from automobiles equipped with catalytic converters. Among these discoveries, as discussed in detail in the specification, are:

1. Decreasing RVP decreases NOx emissions.
2. Decreasing T50 decreases CO and hydrocarbons.
3. Decreasing T10 decreases NOx emissions.
4. Decreasing T90 decreases CO.
5. Decreasing olefin content decreases NOx and hydrocarbon emissions.
6. Increasing paraffin content decreases CO and NOx.
7. Increasing RON decreases hydrocarbons.

Insofar as the present record is concerned--and the Examiner should now have before her references which could stack almost

two feet high--there is nothing even remotely suggestive in the prior art of such an extensive relationship between fuel properties and tailpipe emissions. Indeed, some references teach away from expecting tailpipe benefits by changing fuel properties in accordance with the invention. (For example, see the NIPER--143-PPS-86/1 reference, discussed at pages 15-16 of IDS No. 3, Section A, the data of which reference (e.g., in Table 4-7 on page 4-29) show that decreasing RVP increases exhaust emissions significantly.)

And the non-obviousness of the invention is all the more in evidence because, even after the fact, that is, **even with hindsight**, the results of the invention are something of a mystery. For example, it is not explainable, much less obvious, why lowering RVP reduces NOx, or why increasing paraffins reduces NOx and CO, etc. And with direct pertinence to the claims, it is all the more difficult to arrive at the invention since, in every instance, the claims require a plurality of fuel properties--and usually several fuel properties--which, from the evidence supplied in the specification, work in concert to lower tailpipe emissions.

Of further importance is the fact that all tests as reported in the Examples of the specification were performed with automobiles having catalytic converters.⁶ This is in line with the aim of the invention: to provide a gasoline which, upon combustion, aids in minimizing tailpipe emissions from

⁶ Note, for example, that in Example 1, the automobile tested had state of the art emission technology, including closed loop control on the air-to-fuel ratio, a three way catalyst, and an adaptive learning system. See specification, page 14, lines 25-28.

automobiles equipped with catalytic converters. Alternatively stated, the invention provides a gasoline which, all other things being equal, will result in further emission reductions from automobiles with catalytic converters.

Thus, the crucial issue with respect to the rejection based on Oberdorfer alone is: where does Oberdorfer teach or suggest that a gasoline as required in the claims will, upon combustion in an automobile with a catalytic converter, reduce (or aid in minimizing) emissions from the catalytic converter? The answer without any doubt is nowhere. Oberdorfer nowhere suggests that any individual gasoline property can affect the emissions produced from the catalytic converter. Hence, it is non-obvious, if not impossible, from Oberdorfer's teachings alone, to arrive at the present invention.

The situation is no better with the Oberdorfer-CRC 494 combination. Granted, Fuel 6 has properties "close" to the requirements of one or more of the fuels set forth in "combustion" claims 91, 96, 142 and their dependencies. But the fact remains that Fuel 6 is still not a fuel falling within the scope of a fuel required in any of the present claims. Hence, at a minimum, Fuel 6 must be "modified" to fall within a claimed fuel. Yet there is absolutely nothing in the Oberdorfer-CRC 494 combination to suggest how or why one should modify any fuel taught in CRC 494 for use in Oberdorfer's engine.

Indeed, the teachings in CRC 494 pertaining to Fuel 6 lie buried within a 174-page study relating to octane fuel ratings for 1975 automobiles. Fuel 6 is just one of some 20 or

more fuels disclosed in CRC 494. Absolutely nothing in the 174 pages suggests anything unusual about Fuel 6 in comparison to the other fuels disclosed, and from a wider and more critical viewpoint, there is absolutely nothing disclosed which suggests any advantage to Fuel 6 (or a modified Fuel 6) as compared to the thousands upon thousands, if not millions upon millions, of other automotive fuels whose properties have been disclosed in the prior art. And certainly, there is nothing suggested in the Oberdorfer-CRC 494 combination that Fuel 6 (or a modified Fuel 6) would have the advantage of yielding reduced tailpipe emissions upon combustion.

Thus, only hindsight--and a great amount of it--accounts for the Examiner's deliberate selection of Fuel No. 6 for use in Oberdorfer's engine coupled to a catalytic converter. Indeed, the Examiner's selection of Fuel 6 was probably prompted by applicants' identification of this fuel in their 4/28/94 amendment and IDS #3 as among the closest to their invention as defined in then pending claims 83 to 116. But hindsight is hindsight. The fact that, after the invention is in existence, one can be guided from the claims to those fuels closest to the invention is of no moment. There has to be a reason in the prior art to deliberately select such a fuel, and absolutely no such reason can be found in the prior art.

And this is particularly the case for the "large volume consumption" claims 117, 154 and their dependencies. Fuel 6 was one of 13 fuels "designed," as taught on page 4 of CRC 494:

to estimate the effects of changes in Motor octane number (MON), sensitivity (RON-MON), and volume percent aromatics (AROM) on MUON performance. These fuels formed a Box-Behnken design consisting of the following target values:

MON 81, 84 and 87; sensitivity 5, 8, and 11; AROM 12, 22 and 32. Fuel 13, the centerpoint fuel, is an equal volume mixture of Fuels 1 through 12.

Obviously, Fuel 6 is merely one of 13 test fuels, with nothing unusual about it being otherwise disclosed. Given such teachings as just quoted, there is no motivation for a refiner to produce Fuel 6 (or a modified Fuel 6) on a large volume basis--because there is simply no benefit suggested from so doing.

In addition, to attain the invention of claim 117 or 154 from the Oberdorfer-CRC 494 combination, a petroleum refiner would, for no intelligible reason expressed in the prior art, have to first decide to modify Fuel 6 so that it falls within the scope of the present claims, and then modify equipment and/or operations to consistently and deliberately produce the modified fuel on a large volume basis for sale to the general public. But there simply is no reason or motivation emanating from the Oberdorfer-CRC 494 combination for such modifications. It is only when one is provided with the teachings of applicants' specification that a reason--the reason--emerges for so doing, i.e., minimizing tailpipe emissions and contributing to a better quality of life through cleaner air.

Moreover, the Examiner's argument regarding oxygenates being known to reduce gasoline emissions, assuming it is an accurate statement, is as irrelevant as the fact that Oberdorfer teaches a catalytic converter. Oxygenates have been used in fuels prior to the invention; applicants have never claimed to be the first to introduce oxygenates in fuels. Thus the relevant issue at hand is: given all the fuels which contain (or could contain) oxygenates, how would one know that those having the

additional properties required in the claims--RVP, T50, etc.-- would further aid in minimizing tailpipe emissions?

In this regard, it is important to realize that both the EPA as well as California (through CARB, the California Air Resources Board) have mandated the use of oxygenates in fuels. But they have further mandated other specifications as well, e.g., low RVP, low T50, low T90, low Olefins, to name but a few for CARB. This is independent confirmation that

(1) adding oxygenates alone is not the full answer to reducing tailpipe emissions; and

(2) reducing T50, T90, RVP, and olefins to levels in accordance with the invention in oxygenated fuels will serve as a further aid in lowering tailpipe emissions.

In other words, prior to the invention, there is nothing in the combined Oberdorfer-CRC 494 teachings (to the extent they could be properly combined) to suggest that, if one were to choose oxygenated fuels, the fuels to select should have the RVP, T50, olefin, and/or other properties set forth in the claims. Oberdorfer and CRC 494 suggest absolutely no benefit associated with tailpipe emissions if one decreases any of the following: RVP, T10, T50, T90, and olefins and/or increasing either of the following: paraffins and octane value. Again, the benefits these properties impart to tailpipe emissions is only disclosed by applicants in their specification as part of their invention. They have made a truly valuable invention, and given the deafening silence of relevant disclosures in the prior art, they are clearly entitled to a patent.

In addition, applicants emphasize that the preceding analysis demonstrating the non-obviousness of the invention would lead to the same result even if Fuel 6 actually fell within the scope of one or more of the claims. As the Examiner repeatedly emphasized in the Office Action, the claims at issue are method claims. And the crucial issue with respect to such claims is: why would one select a fuel as required in the claims--whether the fuels be new or old--for the purpose of the method?

The answer is that no reason for such a selection exists. As the record of this application file amply demonstrates, the prior art is flooded with teachings listing gasoline properties. The applicants' claims, however, in their broadest embodiment, are limited to an extremely select group of fuels. Absent a teaching or suggestion in the art of some unusual benefit or advantage to these fuels for combustion in autos with catalytic converters, there is no reason for deliberately focusing on their use in the method claimed. Hence, the unobviousness of the invention.

And with regard to Fuel 6 specifically, and continuing with the hypothetical that it falls literally within the scope of one or more of the fuels of the claims, the Examiner will see that CRC 494 offers absolutely no reason for one to focus on this particular fuel--as opposed to the numerous others disclosed in the reference and in other prior art--and deliberately produce such a fuel on a large volume basis and deliver it to a region of significant air pollution due to automobile exhaust. In fact, a person skilled in this art would understand that Fuel 6 is nothing like a normal commercial fuel and is merely a matrix test

fuel. The reference itself teaches as much; it itemizes Fuel 6 among the "Test Fuels" 1-13 while Fuels 17-21 are designated "Commercial Fuels." Hence, CRC 494 leads away from the idea of Fuel 6 being a viable fuel for large volume usage. Additionally, and more importantly, CRC 494 offers not the slightest inkling that Fuel 6--or any other fuel--would have unusual combustion emission properties. Indeed, the combustion emission properties found most important in the invention--RVP and T50--are only listed in CRC 494's Table II as additional fuel properties, that is, additional to the properties of CRC 494's Table 1 listing the variables of direct interest therein: MON, RON, R-S(S), Aromatics, and Olefins. In short, there is nothing whatever in CRC 494 to suggest Fuel 6 for the purpose of the invention.

C. Claims Require Novel and Unobvious Fuels

In view of the foregoing, it can be seen that it is applicants' position, firstly, that the claims define patentable subject matter, regardless of the patentability of the fuels therein required. However, it is applicants' further position that the claims are patentable on the basis of being limited to novel and unobvious gasoline compositions, that is, applicants believe the claims are limited to novel and unobvious methods employing novel and unobvious gasoline compositions.

This same position was advanced in applicants' amendment delivered April 28, 1994, and in reply, the Examiner's arguments on page 5 of the Office Action implied that, because methods are claimed, the issue of whether the fuels are

themselves patentable is not pertinent. The applicants fully agree that a method claim can be patentable regardless of the patentability of a composition (if any) employed in the method. On the other hand, if a method-of-use claim involves a novel and unobvious starting material, the method claim may be patentable for that reason, i.e., because of the requirement for the novel and unobvious starting material. See *Ex parte Leonard*, 187 USPQ 122, 124 (PTO Bd. App. 1975); *In re Schneider*, 179 USPQ 46, 51 (CCPA 1973). Thus, it is improper for the Examiner to discard any inquiry into the novelty and nonobviousness of the composition, merely because the claims are method claims. The important point to bear in mind is that, if the composition in a method-of-use claim is novel and unobvious, such a composition is part of the invention claimed "as a whole." *In re Schneider*, *supra*.

With respect to the composition, the Examiner noted that there are references teaching compositions of "close characteristics" to some of those required in the claims. This is true, but non-determinative as to both the novelty and the obviousness issues. With respect to Fuel 6 of CRC 494, there is no question but that this fuel is "close," for example, to the fuel required in claim 91:

<u>Property</u>	<u>Fuel 6</u>	<u>Claim 91</u>
RVP	6.3 psi	<7 psi
T50	194° F.	≤210° F.
T90	300° F.	<300° F.
Olefin	1.6 vol%	<10 vol.%
Octane Value	87.2	≥87

The Examiner argues that the T90 of 300° F. for Fuel 6 is "not deemed distinct" from the T90 of <300° F. The applicants are not totally certain what the Examiner means by "not . . . distinct" but there are only two statutes, 35 USC 102 and 103, which could possibly be applicable, and upon review, it will be seen that neither applies.

With regard to 35 USC 102, the claimed fuel, while certainly "close to" Fuel 6, is nevertheless not anticipated by Fuel 6. Fuel 6 does not fall within the specific requirements of the fuel of claim 91, and, at best, Fuel 6 would be an unwitting or accidental duplication of the claimed fuel. Hence, Fuel 6 does not constitute an anticipation of the claim 91 fuel.

Since the composition of claim 91 is novel under 35 USC 102, the next issue is whether the composition of the claim is unobvious within the meaning of 35 USC 103. And the answer here is yes, for several independent reasons:

(1) CRC 494 gives no reason whatever to modify the characteristics of Fuel 6.

(2) The only reason to modify Fuel 6 comes from applicants' disclosure. And

(3) Even if the person skilled in the art were granted the impermissible advantage of some hindsight--say, for example, he or she were told that Fuel 6 could be modified to be less polluting upon combustion--how would such a person know which of the 18 properties of Fuel 6 disclosed in CRC 494 (pp. 19-20) should be modified, and in which direction (increase or decrease), and why? The problem becomes all the more difficult when the modification needed to arrive at the fuel of claim 91

requires one to change T90, a property listed on CRC 494 page 20 as among the "additional" properties--i.e., those merely "additional" to the important properties of page 19 of CRC 494.

Thus, the invention is clearly patentable. Once one ignores how "close" Fuel 6 is from any of the compositions required in the claims, and instead asks the relevant questions focusing on how and why one would change the Fuel 6 composition using only information available in the prior art, the non-obviousness of the fuel required in claim 91 becomes extremely self-manifest.

And since a similar analysis as just shown for claim 91 would apply to the fuels of the other claims, it is submitted that these claims are, like claim 91, further patentable on the basis of the required use of a novel and unobvious fuel.

The "Honolulu Fuel"

Finally, although the Examiner made no rejection based on the data pertaining to the "Honolulu fuel" discussed in Section F of IDS No. 3, applicants nevertheless must address the Examiner's conclusion that "(i)t has not been clearly shown" by the affidavits of Ms. Minner and Dr. Russell that the data with respect to the Honolulu fuel (IDS #3, Section F, Attachment I, page 25) are in error. With all respect, the applicants must state that the Examiner needs more than a naked conclusion to sustain her position. The applicants have come forward with **abundant** evidence and reasons establishing that one skilled in the art would consider the RVP of this fuel to be in error. The

burden has been shifted to the Examiner to explain, if she can, why such evidence and reasons are in error.

In particular, in science and engineering, when one is confronted with 16 data points, in which 15 fall on a straight line or otherwise show a logical conformity while the 16th data point is wildly skewed (this being the essence of the testimony of Ms. Minner and Dr. Russell), the natural conclusion is that **something is wrong with the 16th data point**. And when two different ASTM calculation methods conform virtually identically with the actual data of the 15 data points while both such methods show the 16th to be wildly different,⁷ again, the natural and logical conclusion is that **something is wrong with the 16th data point**. And when it would mean, if one were to believe the 16th data point, that the Hawaiian refiner lost the economic value of butane and was literally throwing away money by operating at 6.7 psi RVP instead of at or near its allowable maximum of 11.5 psi (Ms. Minner's affidavit, page 2; see also pp. 40-41 hereinbefore.), the logical conclusion of the 16th data point being in error with its "6.7 psi" RVP value is reinforced.


In sum, for these and other reasons, the applicants have provided the Examiner with an abundantly logical basis for the conclusion--the virtually inescapable conclusion--that the 6.7 psi value for the 6/86 Honolulu fuel is in error. Hence, the burden has shifted to the Examiner, if she is to maintain the position that the 6.7 psi value is accurate, to either show flaws in the reasoning process in the testimony of Dr. Russell and Ms.

⁷ See Ms. Minner's affidavit, pages 4-6 and Dr. Russell's affidavit, pages 2-5.

Minner or otherwise provide sufficient reasons and/or evidence substantiating the position that the 6.7 psi value is accurate. But the Examiner has done neither. She has merely set forth a conclusory conclusion which, it is most respectfully submitted, is insufficient to maintain her position.

In light of the foregoing, the 35 USC 103 and 112 rejections are unfounded and should be withdrawn. An allowance is requested.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Gregory F. Wirzbicki', is written over the typed name.

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Brea, CA 92622-7600

Large Volume Ind. Claim	Combustion Ind. Claim	RVP	T ₁₀	T ₅₀	T ₉₀	Olefin	Paraffin	Octane	Oxygenate Required
117(a)	142(e)	<7		≤210			>72	≥87	No
117(b)	142(b)	<7		≤210			>65	≥92	No
117(c)	142(e)	<7		<193		<10		≥87	No
117(d)	142(d)	<7		≤210		< 1		≥87	No
154(d)	142(h)	<7	≤158	≤215		<10		≥87	Yes up to 14.9% MTBE
117(e)	91	<7		≤210	<300	<10		≥87	No
	96	<7	≤158	≤210	<300	<10		≥87	No
154(a)	142(e)	<7.5	≤158	≤215	≤315	<10	>65	≥87	Yes
154(b)	142(f)	<7	≤158	≤215			>65	≥87	Yes
154(c)	142(g)	<7	≤158				>70	≥87	Yes

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GASOLINE FUEL

Docket No. 0290112 - P.J. Jessup et al. (GFW/PL)

Large Volume Ind. Claim	Combustion Ind. Claim	RVP	T ₁₀	T ₅₀	T ₉₀	Olefin	Paraffin	Octane	Oxygenate Required
117(a)	142(a)	<7		≤210			>72	≥87	No
117(b)	142(b)	<7		≤210			>65	≥92	No
117(c)	142(c)	<7		<193		<10		≥87	No
117(d)	142(d)	<7		≤210		< 1		≥87	No
154(d)	142(h)	<7	≤158	≤215		<10		≥87	Yes up to 14.9% MTBE
117(e)	91	<7		≤210	<300	<10		≥87	No
	96	<7	≤158	≤210	<300	<10		≥87	No
154(a)	142(e)	<7.5	≤158	≤215	≤315	<10	>65	≥87	Yes
154(b)	142(f)	<7	≤158	≤215			>65	≥87	Yes
154(c)	142(g)	<7	≤158				>70	≥87	Yes